

VIA ECFS

April 9, 2010

Ms. Marlene H. Dortch  
Office of the Secretary  
Federal Communications Commission  
445 Twelfth Street, SW  
Washington, DC 20554

Re: *ET Docket No. 07-113*

Dear Ms. Dortch:

On behalf of BridgeWave Communications, Inc. ("BridgeWave"), we hereby submit the attached supplement to BridgeWave's comments in the above-referenced proceeding. Should there be any questions, please contact the undersigned.

Sincerely,

*/s/ Robert D. Primosch*

Robert D. Primosch

cc: Karen Ansari (via e-mail)

**BridgeWave Communications, Inc.**  
**Updated Background on the 57-64 GHz band NPRM**  
**April 9, 2010**

**Introduction**

BridgeWave Communications, Inc. (“BridgeWave”) is submitting this paper to supplement its comments in support of the rule amendments set forth in the filings of the Wireless Communications Association International, Inc. and proposed in the FCC’s Notice of Proposed Rulemaking (“NPRM”) in ET Docket No. 07-113. The text below reiterates BridgeWave’s desire that the FCC approve these rule amendments as soon as possible. Also provided below is an update as to why the rule amendments have taken on a new urgency of late for users of the unlicensed 60 GHz band.

**Summary of the Proposed Changes**

The NPRM proposes to amend the FCC’s Part 15 rules to change the permitted average transmit EIRP level for an unlicensed 60 GHz outdoor point to point link from 40 dBm to a new level of 82 dBm minus 2 dB for every dB that antenna gain is below 51 dBi. It also proposes to increase the current Part 15 peak power EIRP level from 43 dBm to a new level of 85 dBm minus 2 dB for every dB that the antenna gain is below 51 dBi.

The existing limit, 9  $\mu\text{W}/\text{cm}^2$  average power and 18  $\mu\text{W}/\text{cm}^2$  peak power at 3 meters from the antenna, will remain as an optional alternative.

Finally, the NPRM proposes to eliminate the transmitter identification requirement for “window links”.

**Discussion of the Proposed Changes**

The arguments for and against these amendments are well documented in the filings of WCAI and BridgeWave in connection with the NPRM. The key reason for the requested EIRP-based limitation is the need to eliminate the ambiguity of near field values when the distance of 3 meters is in a “near-field” or in a transition to the far field.

A second advantage is the increase in allowed EIRP for larger antennas (up to 82 dBm), which eliminates the unfair penalty of reduced power for larger antennas.

The window links ID elimination would reduce cost and eliminate an unnecessary feature for a highly directive link.

**Updated Arguments**

BridgeWave reiterates its support of the proposed changes as filed. No additional amendments are requested at this time.

As stated in the NPRM, grant of the proposed EIRP approach would permit 60 GHz transmitters to deliver links over longer distances, thus enhancing the value of the unlicensed 60 GHz band as vehicle for broadband. However, the need for the proposed EIRP approach has now intensified due to the recent interest in using pico cells for 4G deployments. The wireless broadband industry is experiencing an increased demand in densely populated areas for base stations serving 4G mobile devices such as WiMAX and LTE. These base stations are nicknamed “pico cells.” The distance between a pico cell and a macro cell, or between two adjacent pico cells, is normally about 300-500 meters. Traffic to and from mobile devices needs to be backhauled to the next pico cell or macro cell. Since the expected 4G traffic capacity per pico cell site is between 50 – 150 Mbps (depending on the number of sectors in use), and since pico cells might be daisy chained for backhaul to the macro cell, the required backhaul capacity is roughly estimated to vary between 50 – 500 Mbps. The combination of high capacity and the short distance between the cell sites makes the 60 GHz band an excellent backhaul solution for pico cells. While other wireless backhaul options might be used, including sharing the 4G spectrum to transmit backhaul traffic (“in-band backhaul”), a low-cost 60 GHz radio would provide the multiple advantages of spectral efficiency (since 4G spectrum would not have to be used for backhaul), higher capacity and a lower latency.

The recent developments of integrated-circuits for 60 GHz radio front ends using SiGe technology and the emergence of CMOS devices in these frequencies further reduce the cost and size of a 60 GHz radio suitable for pico cell backhaul applications. The advantages of smaller size are particularly relevant in situations where pico cells installed on outdoor structures (e.g., light poles on city streets) may be subject to dimensional and aesthetic constraints imposed by local governments.

The attractiveness of using smaller 60 GHz radios to provide a 500 meter link with 100-500 Mbps capacity (and eventually 1 Gbps) would be further enhanced by adoption of the proposed EIRP rules. For example, the rules could enable a 60 GHz user to operate with a smaller antenna gain (without loss of link performance) where cost or size considerations mandate the use of smaller antennas with limited aperture dimensions. Also, the proposed EIRP rules will give 60 GHz users more clarity on power limitations where miniature pico cell antennas (below 5 inch width) do not have a circular aperture shape. If the aperture is un-even, such as a rectangle or an oval, the definition of “near field” is different for the E-plane and H-plane, thus adding ambiguity to the existing “3 meter” definition.

The last requested change was the elimination of ID transmission for an indoor terminal transmitting outside through a window. The increased complexity of modulation schemes in recently developed radios make the implementation of the existing requirement even more expensive, given that such ID should be accessible to third parties. Furthermore, experience shows that such window applications are quite rare; office buildings occupants rarely tolerate indoor mounting of a radio behind a window. Some office-building window glasses are coated with protection films that highly attenuate millimeter-wave radiation. The economic penalty of complying with the ID requirement for the few remaining “through the window” radios in the entire radio population is excessive and without any countervailing benefits.